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ENVIRONMENTAL PROTECTION AGENCY

[EPA-HQ-OW-2004-0019; FRL-9910-86-OW]

External Peer Review Draft Aquatic Life Ambient Water Quality Criterion for Selenium -
Freshwater 2014

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of Availability.

SUMMARY: The Environmental Protection Agency's (EPA) recommended water quality criteria provide technical information for states and authorized tribes to adopt water quality standards under the Clean Water Act to protect human health. EPA is announcing the release of the External Peer Review Draft Aquatic Life Ambient Water Quality Criterion for Selenium – Freshwater 2014 (EPA-822-P-14-001) for public comment. Following closure of the public comment period, an EPA contractor will organize and conduct an independent expert external letter peer review of the draft criterion document. Public comments will be made available to the peer reviewers for consideration during their review. This external peer review draft criterion document does not represent and should not be construed to represent any final EPA policy, viewpoint, or determination.

DATES: The public comment period begins on [INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER] and ends on [INSERT DATE 30 DAYS AFTER PUBLICATION IN THE FEDERAL REGISTER]. Scientific views should be submitted to the public EPA docket by [INSERT DATE 30 DAYS AFTER PUBLICATION IN THE FEDERAL REGISTER]. Scientific views postmarked after this date may not receive the same consideration.

ADDRESSES: Submit your scientific views, identified by Docket ID No. EPA-HQ-OW-2004-0019, by one of the following methods:

- www.regulations.gov: Follow the on-line instructions for submitting comments.
- Email: ow-docket@epa.gov. Attention Docket No. EPA-HQ-OW-2004-0019.
- Mail: EPA Water Docket, Environmental Protection Agency, Mailcode: 2822-IT, 1200 Pennsylvania Ave., NW. Washington, DC 20460. Attention Docket No. EPA-HQ-OW-2004-0019. Please include a total of two copies (including references).
- Hand Delivery: EPA Water Docket, EPA Docket Center, William Jefferson Clinton West Building, Room 3334, 1301 Constitution Avenue NW, Washington, DC 20004, Docket No. EPA-HQ-OW-2004-0019. Such deliveries are only accepted during the Docket's normal hours of operation, and special arrangements should be made for deliveries of boxed information.

Instructions: EPA's policy is that all comments received will be included in the public docket without change and may be made available online at www.regulations.gov, including any personal information provided, unless the comment includes information claimed to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Do not submit information that you consider to be CBI or otherwise protected through www.regulations.gov or e-mail. The www.regulations.gov website is an "anonymous access" system, which means EPA will not know your identity or contact information unless you provide it in the body of your comment. If you send an e-mail comment directly to EPA without going through www.regulations.gov your e-mail address will be automatically captured and included as

part of the comment that is placed in the public docket and made available on the Internet. If you submit an electronic comment, EPA recommends that you include your name and other contact information in the body of your comment and with any disk or CD-ROM you submit. If EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, EPA may not be able to consider your comment. Electronic files should avoid the use of special characters, any form of encryption, and be free of any defects or viruses. For additional information about EPA's public docket visit the EPA Docket Center homepage at

<http://www.epa.gov/epahome/dockets.htm>. For additional instructions on submitting comments, go to Section III of the **SUPPLEMENTARY INFORMATION** section of this document.

Docket: All documents in the docket are listed in the www.regulations.gov index. Although listed in the index, some information is not publicly available, e.g., CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, will be publicly available only in hard copy. Publicly available docket materials are available either electronically in www.regulations.gov or in hard copy at the EPA-HQ-OW-2004-0019 Docket, EPA/DC, William Jefferson Clinton Building West, Room 3334, 1301 Constitution Ave., NW, Washington, DC. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566-1744, and the telephone number for the EPA Water Docket is (202) 566-2426.

FOR FURTHER INFORMATION CONTACT: Kathryn Gallagher at U.S. EPA, Office of Water, Health and Ecological Criteria Division (4304T), 1200 Pennsylvania Avenue NW, Washington, DC 20460; telephone: (202)564-1398; or e-mail: gallagher.kathryn@epa.gov.

SUPPLEMENTARY INFORMATION:

I. What Are Recommended Water Quality Criteria?

EPA's recommended water quality criteria are scientifically derived numeric values that protect aquatic life or human health from the deleterious effects of pollutants in ambient water.

Section 304(a)(1) of the Clean Water Act (CWA) requires EPA to develop and publish and, from time to time, revise, criteria for protection of water quality and human health that accurately reflect the latest scientific knowledge. Water quality criteria developed under section 304(a) are based solely on data and scientific judgments on the relationship between pollutant concentrations and environmental and human health effects. Section 304(a) criteria do not reflect consideration of economic impacts or the technological feasibility of meeting pollutant concentrations in ambient water.

EPA's recommended Section 304(a) criteria provide technical information to states and authorized tribes in adopting water quality standards that ultimately provide a basis for assessing water body health and controlling discharges or releases of pollutants. Under the CWA and its implementing regulations, states and authorized tribes are to adopt water quality criteria to protect designated uses (e.g., public water supply, aquatic life, recreational use, or industrial use). EPA's recommended water quality criteria do not substitute for the CWA or regulations, nor are they regulations themselves. EPA's recommended criteria do not impose legally binding requirements. States and authorized tribes have the discretion to adopt, where appropriate, other scientifically defensible water quality criteria that differ from these recommendations.

II. What is Selenium and Why is EPA Concerned About It?

Selenium is a naturally occurring chemical element that is nutritionally essential in small amounts, but toxic at higher concentrations. Selenium can be released to the environment by a number of anthropogenic sources, such as coal mining, coal-fired power plants (fly ash), irrigated agriculture, and phosphate mining. Selenium is a bioaccumulative pollutant. Fish and other aquatic organisms are exposed and accumulate selenium primarily through their diet, and not directly through water. Selenium toxicity in fish occurs primarily through maternal transfer to the eggs and subsequent reproductive effects. Consequently, EPA is working on an update to its national recommended chronic aquatic life criterion for selenium in freshwater to reflect the latest scientific information, which indicates that selenium toxicity to aquatic life is primarily driven by organisms consuming selenium-contaminated food rather than by being directly exposed to selenium dissolved in water.

III. Information on the External Peer Review Draft Aquatic Life Ambient Water Quality Criterion for Selenium – Freshwater 2014

EPA has prepared an external peer review draft aquatic life criterion document for selenium based on the latest scientific information and current EPA policies and methods, including EPA's *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses* (1985) (EPA/R-85-100) and *Guidelines for Ecological Risk Assessment* (1998) (EPA/630/R-95/002F). Toxicity data and other information on the effects of selenium were obtained from reliable sources and subjected to both internal, and in some cases external, peer review. Public comments previously collected in response to EPA's

2004 notice of availability (published on December 17, 2004 at 69 FR 75541) and new toxicity data for selenium developed in response to those comments (EPA-822-F-08-005) were also considered in the development of the external peer review draft criterion document.

The external peer review draft criterion has four elements, consisting of two fish tissue-based and two water column-based elements. The external peer review draft criterion document contains a recommendation that states and authorized tribes adopt into their water quality standards a selenium criterion that includes all four elements. The draft criterion document goes on to recommend that (because fish tissue-based concentration is a more direct measure of selenium toxicity to aquatic life than water column concentrations) fish tissue elements be given precedence over the water column elements when both types of data are available.

The available data indicate that freshwater aquatic life would be protected from the toxic effects of selenium by applying the following four-element criterion:

1. The concentration of selenium in the eggs or ovaries of fish does not exceed 15.2 mg/kg, dry weight; ¹
2. The concentration of selenium (a) in whole-body of fish does not exceed 8.1 mg/kg dry weight, or (b) in muscle tissue of fish (skinless, boneless fillet) does not exceed 11.8 mg/kg dry weight; ²
3. The 30-day average concentration of selenium in water does not exceed 4.8 µg/L in lotic (flowing) waters and 1.3 µg/L in lentic (standing) waters more than once in three years on average; ³
4. The intermittent concentration of selenium in either a lentic or lotic water, as appropriate, does not exceed $WQC_{int} = \frac{WQC_{30-day} - C_{bkgnd}(1-f_{int})}{f_{int}}$ more than once in three years on average. ^{3, 4}

Media Type	Fish Tissue		Water Column ³	
Criterion Element	Egg/Ovary ¹	Fish Whole-Body or Muscle ²	Monthly Average Exposure	Intermittent Exposure ⁴
Magnitude	15.2 mg/kg	8.1 mg/kg whole body or 11.8 mg/kg muscle (skinless, boneless filet)	1.3 µg/L in lentic aquatic systems 4.8 µg/L in lotic aquatic systems	$WQC_{int} = \frac{WQC_{30-day} - C_{bkgnd}(1 - f_{int})}{f_{int}}$
Duration	Instantaneous measurement ⁵	Instantaneous measurement ⁵	30 days	Number of days/month with an elevated concentration
Frequency	Never to be exceeded	Never to be exceeded	Not more than once in three years on average	Not more than once in three years on average

¹ Overrides any whole-body, muscle, or water column elements when fish egg/ovary concentrations are measured.

² Overrides any water column element when both fish tissue and water concentrations are measured.

³ Water column values are based on dissolved total selenium in water.

⁴ Where WQC_{30-day} is the water column monthly element, for either a lentic or lotic system, as appropriate. C_{bkgnd} is the average background selenium concentration, and f_{int} is the fraction of any 30-day period during which elevated selenium concentrations occur, with f_{int} assigned a value ≥ 0.033 (corresponding to 1 day).

⁵ Instantaneous measurement. Fish tissue data provide point measurements that reflect integrative accumulation of selenium over time and space in the fish at a given site. Selenium concentrations in fish tissue are expected to change only gradually over time in response to environmental fluctuations.

The draft criterion document does not include a draft acute criterion (based on water-only exposure) because selenium is bioaccumulative and toxicity primarily occurs through dietary exposure. If there are rare instances where selenium sources could cause acute effects while attaining the chronic criterion concentrations, a pollution control authority could establish a site-specific acute criterion to protect from those effects.

Following closure of the public comment period, a contractor will organize and lead an external expert peer review conducted by letter. The peer reviewers will have access to public comments received in the official public docket for this activity under docket ID number EPA-HQ-OW-2004-0019. Following peer review, EPA will consider the peer reviewer and public comments, revise the document as necessary, and publish a Federal Register notice announcing the availability of the draft proposed selenium criterion and soliciting scientific views for 30 days from the public. EPA will then revise the document again and issue a final updated selenium criterion document.

IV. What is the Relationship between the External Peer Review Draft Water Quality Criterion and Your State or Tribal Water Quality Standards?

As part of the water quality standards triennial review process defined in section 303(c)(1) of the CWA, the states and authorized tribes are responsible for maintaining and revising water quality standards. Water quality standards consist of designated uses, water quality criteria to protect those uses, a policy for antidegradation, and may include general policies for application and implementation. Section 303(c)(1) requires states and authorized tribes to review and modify, if appropriate, their water quality standards at least once every three years.

States and authorized tribes must adopt water quality criteria that protect designated uses. Protective criteria are based on a sound scientific rationale and contain sufficient parameters or constituents to protect the designated uses. Criteria may be expressed in either narrative or numeric form. States and authorized tribes have four options when adopting water quality criteria for which EPA has published section 304(a) criteria. They can:

- (1) Establish numerical values based on recommended section 304(a) criteria;
- (2) Adopt section 304(a) criteria modified to reflect site-specific conditions;
- (3) Adopt criteria derived using other scientifically defensible methods; or
- (4) Establish narrative criteria where numeric criteria cannot be established or to supplement numerical criteria (40 CFR 131.11(b)).

EPA believes that it is important for states and authorized tribes to consider any new or updated section 304(a) criteria as part of their triennial review to ensure that state or tribal water quality standards reflect current science and protect applicable designated uses. The recommendations in the external peer review draft selenium criterion document may change based on scientific views shared in response to this notice and those of the external peer reviewers. Upon finalization, the updated selenium criterion would supersede EPA's previous 304(a) freshwater criteria for selenium.

Consistent with 40 CFR 131.21, new or revised water quality criteria adopted into law or regulation by states and authorized tribes on or after May 30, 2000 are in effect for CWA purposes only after EPA approval.

Dated: May 6, 2014.

Nancy K. Stoner,

Acting Assistant Administrator, Office of Water.

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